

view of Okumura (U.S. Pat. No. 5,568,163); rejected claims 23, 24, and 27-30 under 35 U.S.C. § 103 as being unpatentable over Duwaer in view of Lee (U.S. Pat. No. 6,064,459); and rejected claims 25 and 26 under 35 U.S.C. § 103 as being unpatentable over Duwaer in view of Matsuura et al. and further in view of Lee. These rejections are respectfully traversed and reconsideration is requested.

The rejection of claims 3, 4, 16-21, and 31 under 35 U.S.C. § 103(a) as being unpatentable over Duwaer is respectfully traversed and reconsideration is requested.

Claim 3 is allowable over the cited references in that claim 3 recites a combination of elements including, for example, “supplying data signal voltages having a width enlarged in accordance with a distance from a source of the scanning signal to the signal wires.” None of the cited references, including Duwaer, either singly or in combination, teaches or suggests at least these features of the claimed invention.

Claim 4 is allowable over the cited references in that claim 4 recites a combination of elements including, for example, “allowing the data signal voltages to be supplied to the signal wires to have a different width in accordance with a distance from a source of the scanning wire.” None of the cited references, including Duwaer, either singly or in combination, teaches or suggests at least these features of the claimed invention.

Claim 16 is allowable over the cited references in that claim 16 recites a combination of elements including, for example, “signal side driving means for supplying data signal voltages having a width enlarged in accordance with a distance from a source on the scanning wire to the signal wires.” None of the cited references, including Duwaer, either singly or in combination, teaches or suggests at least these features of the claimed invention. Accordingly, Applicants respectfully submit that claims 17-18, which depends from claim 16, are allowable over the cited references.

Claim 19 is allowable over the cited references in that claim 19 recites a combination of elements including, for example, “width control means for making the data signal voltages to be supplied to the signal wires have a different width in accordance with a distance from a source on the scanning wire.” None of the cited references, including Duwaer, either singly or in combination, teaches or suggests at least these features of the claimed invention. Accordingly, Applicants respectfully submit that claims 20-21, which depends from claim 19, are allowable over the cited references.

Claim 31 is allowable over the cited references in that claim 31 recites a combination of elements including, for example, “wherein the data signal voltages have varying widths depending on a distance of the data lines from the scanning signal sources.” None of the cited references, including Duwaer, either singly or in combination, teaches or suggests at least these features of the claimed invention.

The Examiner cites Duwaer as “applying the video signal (A) having a width increased (see Figure 3(c), col. 7, lines 20-22) in accordance with the position of the scanning wire m2l-1, m2l, m2l+1, and m2l+2 (see figure 7).” Office Action at 5, 6, and 7. Applicants respectfully note that Duwaer states at col. 7, lines 18-22 “As will be observed in the logical timing diagrams for the FIG. 3(c) embodiment, the acquisition time of the sample and hold mode has been increased by decreasing the time that the sample and hold is connected to the panel.” Additionally, at col. 7, lines 6-8, Duwaer states, with respect to FIG. 3(c), “the legend A→panel indicates the time during which the sampled signal is supplied to the LCD panel.” As shown in FIG. 3(c) and in text related thereto, there is no indication of an existence of a relationship between data signal voltage widths and a relative location of a scanning wire or signal, as claimed in the claimed invention. Thus, Duwaer fails to teach or suggest a relationship of signal voltage widths on relative positions of scanning signals or wires, as in the claimed invention.

The rejection of claims 5, 6, 22, and 32-35 under 35 U.S.C. § 103(a) as being unpatentable over Duwaer in view of Matsuura et al. is respectfully traversed and reconsideration is requested.

Claim 5 is allowable over the cited references in that claim 5 recites a combination of elements including, for example, “supplying a scanning signal voltage having a width enlarged in accordance with a distance from a source of the signal wire to the scanning wire.” None of the cited references, including Duwaer or Matsuura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

Claim 32 is allowable over the cited references in that claim 32 recites a combination of elements including, for example, “wherein the scanning signal voltage have varying widths depending on a distance of the scanning lines from the scanning signal sources.” None of the cited references, including Duwaer or Matsuura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

Claim 33 is allowable over the cited references in that claim 33 recites a combination of elements including, for example, “wherein the scanning signal voltage have varying widths depending on a distance of the scanning lines from the data signal sources.” None of the cited references, including Duwaer or Matsuura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

Claim 34 is allowable over the cited references in that claim 34 recites a combination of elements including, for example, “wherein a scanning signal voltage have varying widths depending on the distance of the scanning lines from the data signal sources.” None of the cited references, including Duwaer or Matsuura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

Claim 6 is allowable over the cited references in that claim 6 recites a combination of elements including, for example, “supplying data signal voltages having a width enlarged in accordance with a distance from a source of the scanning wire to the signal wires.” None of the cited references, including Duwaer or Matsuura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

Claim 22 is allowable over the cited references in that claim 22 recites a combination of elements including, for example, “signal side driving means for supplying a data signal voltage having a width enlarged in accordance with a distance from a source of the scanning wire to the signal wire.” None of the cited references, including Duwaer or Matsuura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

With respect to claims 5 and 32-34, the Examiner cites Duwaer as teaching “all of the claimed limitations of claims 3 and 4 [and 34], except for ‘supplying a scanning signal voltage having a width enlarge in accordance with a distance from a source of the signal wire to the scanning wire’.” The Examiner relies on Matsuura et al. to cure the deficiencies of Duwaer. Specifically, the Examiner cites Matsuura et al. (referring to FIGS. 24 and 25 but using subject matter shown in FIGS. 14 and 15) as teaching an apparatus and method “which includes the ON period of all the scanning lines starts at the time t_0 , and terminates at gradually delaying times t_1 , t_2 , and t_m (width enlarged) synchronizing with the video signal (A) having a width increased (in accordance with a distance form a source of the signal wire to the scanning wire).” Office Action at 9 or 19. However, Applicants respectfully submit that Matsuura et al., recites at column 22, line 57-65 “At a time t_0 , the data transfer circuit 60 outputs the red color signal R_n to the pixels connected to the first through the m -th scanning lines (m is the number of scanning lines). At the same time, the data scanning circuit 70 supplies a scanning signal to the first through the m -th scanning lines, allowing all the scanning lines to be active simultaneously. The

scanning lines are kept in the ON state for predetermined ON periods P1 to Pm specifically determined for the respective scanning lines.” Matsuura et al. recites at column 23, lines 9-14, “In this example, the ON period of all the scanning lines starts at the time t_0 , and terminates at gradually delaying times t_1 , t_2 , ..., and t_m as the scanning proceeds from the first scanning line toward the m-th scanning line. In other words, the ON periods P1, P2, P3, ... and Pm for the scanning lines are longer in this order.” Matsuura et al. recites at column 23, lines 22-26, “By gradually changing the ON times for the scanning lines, the difference between the rising times of the liquid crystal corresponding to the pixels connected to the first scanning line and at the pixels connected to the m-th scanning line is reduced.” As shown in either of Figures 14 and 15 and in the related text of Matsuura et al., there is no indication of the presence of a relationship between scanning signal voltage widths and a relative location of a data signal source, as claimed in the claimed invention. Thus, the cited references, including Duwaer and Matsuura et al., either singly or in combination, fail to teach or suggest at least these features of the claimed invention.

Claim 35 is allowable over the cited references in that claim 35 recites a combination of elements including, for example, “wherein a data signal voltages have varying width depending on the distance of the data lines from the scanning signal sources.” None of the cited references, including Duwaer or Matsuura et al., either singly or in combination, teaches or suggests at least this feature of the claimed invention.

The Examiner cites Matsuura et al. as “teaching all of the claimed limitations of claim 35, except ‘a plurality of data drivers, a plurality of gate drivers, and a data signal voltage source having varying widths depending on the distance of the data lines from the scanning signal source.” The Examiner relies on Duwaer to cure the deficiencies of Matsuura et al. However, as similarly discussed above with respect to claims 3, 4, 6, 16, 19, 22, and 31, Duwaer fails to teach

or suggest a dependency of widths of data signal voltage sources on relative positions of scanning signals or wires, as claimed in the present invention. Thus, the cited references, including Matsuura et al. and Duwaer, either singly or in combination, fail to teach or suggest at least the aforementioned combination of elements.

The rejection of claims 13-15 under 35 U.S.C. § 103 as being unpatentable over Duwaer in view of Okumura is respectfully traversed and reconsideration is requested.

Claim 13 is allowable over the cited references in that claim 13 recites a combination of elements including, for example, “width control means for allowing the scanning signal voltage to have a different width in accordance with a distance from a source of the signal wire.” None of the cited references, including Duwaer and Okumura, either singly or in combination, teaches or suggests at least this feature of the claimed invention.

The Examiner cites Duwaer as “teaching all of the claimed limitations of claim 13, except for ‘supplying a scanning signal voltage have a different width in accordance with a distance from a source of the signal wire’.” The Examiner relies on Okumura to cure the deficiencies of Duwaer. Specifically, the Examiner cites Okumura as teaching “a scanning signal circuit GL₁, ...GL_n (a width control means) have a different width enlarged of a time period ΔT (see figure 5A to 5F, col. 4, lines 12-19) synchronizing with the video signal (A) having a width increased (in accordance with a distance from a source of the signal wire to the scanning wire).” Office Action at 11. However, Applicants respectfully submit that Okumura recites at column 4, lines 13 to 16, “For example, in the pair of the gate lines GL₄ and GL₅ simultaneously driven for the time period T₃, the gate line GL₄ is changed from high to low by a time period ΔT prior to the change of the potential at the gate line GL₅.” As shown in FIGS. 5A-5F, with any pair of gate lines driven in a single time period, the even numbered gate line is changed from high to low by a time period ΔT prior to the change of the potential at the odd

numbered gate line. Accordingly, there is no indication in Okumura in either Figures 5A-5F or in the related text of the presence of a width control means for allowing the scanning signal voltage to have a different width in accordance with a distance from a source of the signal wire, as is required by the claim. Thus, the cited references, including Duwaer and Okumura, either singly or in combination, fail to teach or suggest a dependency of scanning voltage widths on a relative position of signal wires. Accordingly, Applicants respectfully submit that claims 14 and 15, which depend from claim 13, are allowable over the cited references.

The rejection of claims 23, 24, and 27-30 under 35 U.S.C. § 103 as being unpatentable over Duwaer in view of Lee is respectfully traversed and reconsideration is requested.

Claim 23 is allowable over the cited references in that claim 23 recites a combination of elements including, for example, “a width controller for carrying widths of time periods during which the data signals are applied by the data driver integrated circuits to the data lines in accordance with the data lines’ respective positions with respect to a scanning line source.” None of the cited references, including Duwaer and Lee, either singly or in combination, teaches or suggests at least this feature of the claimed invention. Applicants respectfully submit that claim 24 which depends from claim 23, is allowable over the cited references.

Claim 27 is allowable over the cited references in that claim 27 recites a combination of elements including, for example, “applying data line signals to each of the data lines, a first width of a first one of the data line signals applied to a first one of the data lines located a first distance from the scanning driver IC being greater than a second width of a second one of the data line signals applied to a second one of the data lines located a second distance from the scanning driver IC, wherein the first distance is greater than the second distance.” None of the cited references, including Duwaer and Lee, either singly or in combination, teaches or suggests

at least this feature of the claimed invention. Applicants respectfully submit that claim 28, which depends from claim 27, is allowable over the cited references.

Claim 29 is allowable over the cited references in that claim 29 recites a combination of elements including, for example, “applying scanning line signals to each of the scanning lines, a first width of a first one of the scanning line signals applied to a first one of the scanning lines located a first distance from the data driver ICs being greater than a second width of a second one of the scanning line signals applied to a second one of the scanning lines located a second distance from the data driver ICs, wherein the first distance is greater than the second distance.” None of the cited references, including Duwaer and Lee, either singly or in combination, teaches or suggests at least this feature of the claimed invention. Applicants respectfully submit that claim 30, which depends from claim 29, is allowable over the cited references.

The Examiner cites Duwaer as teaching “all of the claimed limitations of claim 23 [and 27], except for ‘a plurality of scanning driver integrated circuit, a plurality of data driver integrated circuits’.” Office Action at 13 and 17. However, as similarly discussed with respect to claims 3, 4, 6, 16, 19, 22, 31, and 35, it is respectfully submitted that Duwaer fails to teach or suggest a width controller for carrying widths of time periods during which the data signals are applied by the data driver integrated circuits to the data lines according to a relative positional dependency of the data lines with respect to the scanning line source or applying data line signals to each of the data lines wherein a first width of a first one of the data line signals applied to a first one of the data lines located a first distance from the scanning driver IC being greater than a second width of a second one of the data line signals applied to a second one of the data lines located a second distance from the scanning driver IC, wherein the first distance is greater than the second distance.

Lee fails to cure the deficiencies of Duwaer in that Lee fails to teach or suggest at least the aforementioned claimed elements.

The rejection of claims 25 and 26 under 35 U.S.C. § 103 as being unpatentable over Duwaer in view of Matsuura et al. and Okumura is respectfully traversed and reconsideration is requested.

Claim 25 is allowable over the cited references in that claim 25 recites a combination of elements including, for example, “a controller for varying widths of time periods during which the scanning signals are applied by the scanning driver integrated circuits to the scanning lines in accordance with the scanning lines’ respective positions with respect to the data line source.” None of the cited references, including Duwaer, Matsuura et al., and Okumura, either singly or in combination, teaches or suggests at least these features of the claimed invention. Applicants respectfully submit that claim 26, which depends from claim 25, is allowable over the cited references.

The Examiner cites Duwaer and Matsuura et al. as teaching “all of the claimed limitations of claim 25, except for ‘a plurality of scanning driver integrated circuit, a plurality of data driver integrated circuits’.” The Examiner relies on Okumura to cure the deficiencies of Duwaer and Matsuura et al. However, as similarly discussed with respect to claims 5 and 32-34 Duwaer and Matsuura et al., singly and in combination, fail to teach or suggest a controller for varying widths of time periods during which the scanning signals are applied by the scanning driver integrated circuits to the scanning lines according to a relative positional dependency of the scanning lines with respect to the data line source.

Okumura fails to cure the deficiencies of Duwaer and Matsuura et al. in that Okumura fails to teach or suggest at least the aforementioned claimed elements.

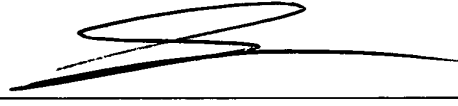
If the Examiner deems that a telephone call would further the prosecution of this application, the Examiner is invited to call the undersigned at (202) 624-1200. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

Respectfully submitted,

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